REMARKS

Present Status of the Application

The Office Action mailed December 24, 2003 rejected all presently pending claims 1-6. Specifically, claims 1-6 were rejected under 35 U.S.C. 112, second paragraph. Claims 1 and 4-6 were rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,251,731 to Wu in view of US Patent No. 5,990,527 to Wen. In response thereto, Applicant has amended independent claim 1. Reconsideration of claims 1-6 is respectfully requested.

Summary of the Application

The present application is directed to a Mask ROM structure. The Mask ROM includes a substrate, gates, gate dielectrics, buried bit lines, an insulator, word lines and a coding layer, wherein the coding layer is between the word lines and the gates. In the Mask ROM, a memory cell is constituted of a gate, the substrate and the gate oxide layer under the gate, and the coding layer on the gate, while the coding layer on a gate of a memory cell serves as a coding region of the memory cell. The coding regions of some memory cells are implanted with coding ions and are in a logic state of 1 (or 0), and the coding regions of the other memory cells are not implanted with coding ions and are in a logic state of 0 (or 1).

Discussion of Rejections under 35 U.S.C. 112

Claims 1-6 were rejected under 35 U.S.C. 112, second paragraph, because the location of the implanted coding ions is not clear in independent claim 1. Applicant has amended

independent claim 1 by clarifying the location of the implanted coding ions. In the amended claim 1, the term "coding region is added merely for distinguishing the coding layer of each memory cell, which is supported by the original disclosure (for example, see Fig. 1D) and, thus, does not introduce new matter. It is believed that such amendments make claims 1-6 satisfy the requirements of 35 U.S.C. 112.

Discussion of Rejections under 35 U.S.C. 103(a)

Claims 1 and 4-6 were rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,251,731 to Wu in view of US Patent No. 5,990,527 to Wen.

The features of the Mask ROM of this invention include that a coding layer is disposed between the gates and the word lines to serve as the coding regions of the memory cells. The feature is recited in amended independent claim 1 as follows, marked by underlines:

1. A Mask ROM, comprising:
a substrate;
.....; and
a coding layer between the word lines and the gates, wherein
a gate, the substrate and the gate oxide layer under the gate, and the coding layer on the gate constitute a memory cell, and the coding layer on the gate of a memory cell serves as a coding region of the memory cell; and
the coding regions of some memory cells are implanted with coding ions and are in a logic state of 1 (or 0), and the coding regions of other memory cells are not implanted with coding ions and are in a logic state of 0 (or 1).

Wu does not teach a coding layer between the word lines and the gates, as mentioned in the Office Action. Wen also fails to teach or suggest the above feature of this invention for the following reasons:

1) According to col. 6, line 35 of Wen, the layer 49 that is considered as a coding layer in the Office Action is actually an ***insulating layer***, but ***not a coding layer whose conductivity can be changed by impurity doping***. In fact, the layer 49 is a ***gate insulating layer*** according to Figs. 4H-4I, since the layer 50a, 50c, 50d and 50e under the layer 49 are ***channels*** of memory cells (col. 6, lines 4-6) and the layers 53a and 53b on the layer 49 are word lines (col. 6, line 50) that also serve as ***gates*** of memory cells in Wen.

2) According to Figs. 4H-4I and col. 7, lines 17-28, the ***real*** coding layers being selectively implanted with coding ions should be the channel layers 53a/b/c/d/e/f under the layer 49 in Wen. The channel layers 53a/b/c/d/e/f are located under the word lines 53a/b that also serve as gates of memory cells, but not between gates and word lines. That is, ***the coding layer is not between gates and word lines in Wen***.

3) According to Figs. 4H-4I, the word lines also serve as gates of memory cells in Wen. However, in this invention, the word lines and the gates of memory cells are separate and interposed by a coding layer.

Therefore, at least the above feature (a coding layer between the word lines and the gates) of this invention as defined in claim 1 cannot be obtained by combining Wu and Wen.

For at least the reasons mentioned above, Applicant respectfully submits that independent claim 1 patently defines over the prior art.

For at least the same reasons mentioned above, Applicant respectfully submits that claims 4-6 dependent from independent claim 1 also patently define over the prior art.

Applicatoin No.: 10/065,645 **Docket No.: JCLA9502**

CONCLUSION

For at least the foregoing reasons, it is believed that pending claims 1-6 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,
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